The Institution of Structural Engineers

IPD Guidance

Chartered Member

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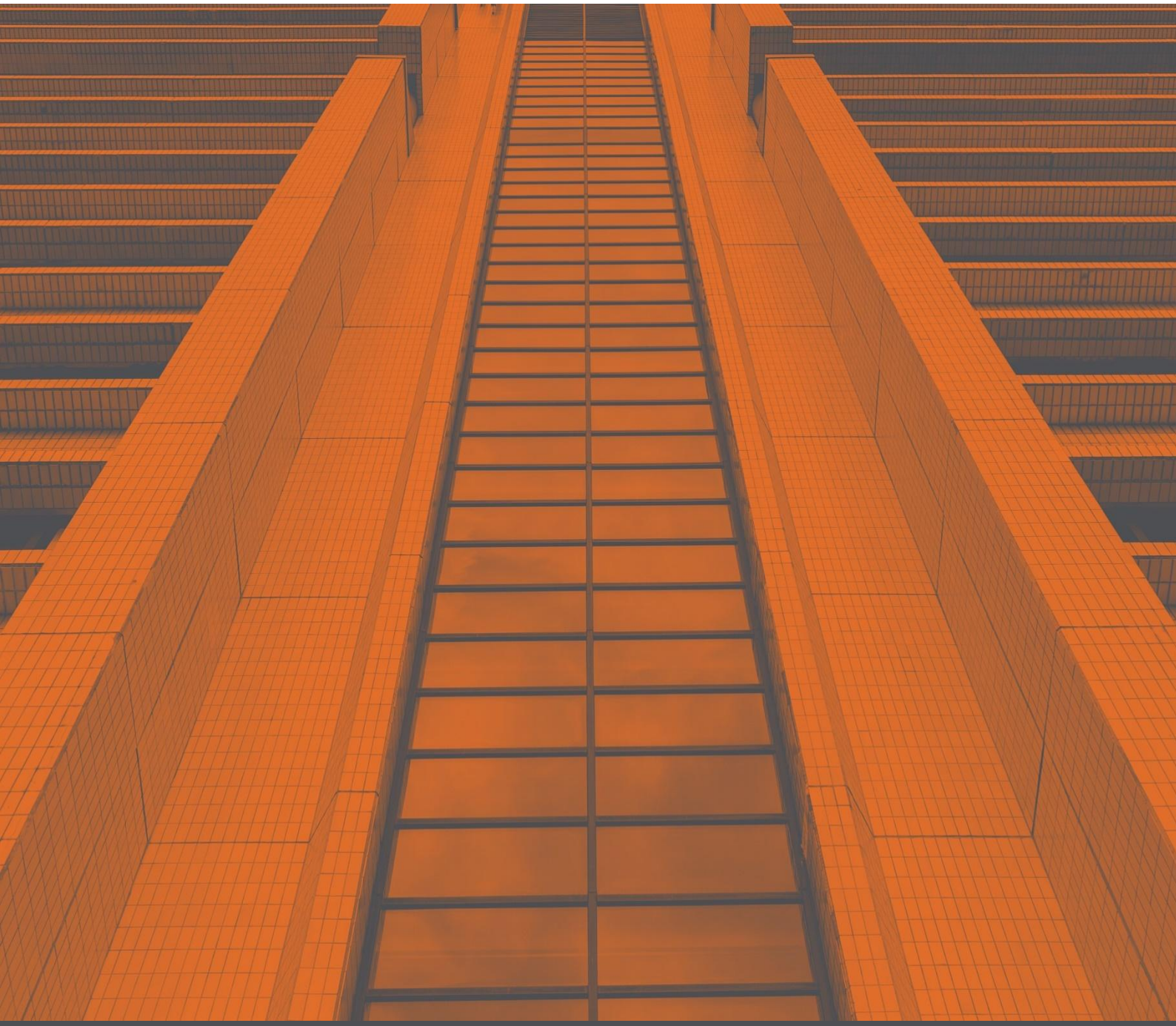

Contents

Introduction

The Institution's Professional Review process contains two parts:

- Professional Review Interview (PRI)
- Examination

Candidates who satisfy both parts of the Professional Review will be eligible for election to Chartered Membership.

The contents of this guidance document are also to be followed for those applying for the Associate (AIStructE) grade, if eligible.

This guide will help you prepare for your Professional Review Interview. Information about the examinations can be found on the website - https://www.istructe.org/training-and-development/membership-exams/

Please ensure you read this document thoroughly to avoid any delays in processing your application.

Initial Professional Development (IPD)

IPD is the progressive development of the specialist knowledge and skills needed to practise as a structural engineer. It bridges the gap between your educational base and attaining professional qualifications. The Institution describes IPD in terms of Core Objectives, which are defined to minimum standards.

Gaining competence and experience at work will develop your ability to carry responsibility and make independent judgements. Early in your career your focus will be on broadening your experience and skills as you get involved with various projects. As you continue to progress, your understanding and abilities will develop to provide you the standards required to complete your IPD.

All relevant experience may be considered, including pre-graduate experience from 'sandwich', part-time or vacation work. However, the amount of pre-graduate experience which may be included will depend on the quality of the experience gained by the individual and its relevance to the Core Objectives.

You are available to apply at any stage of your career, although it is extremely unlikely that you will achieve an adequate range of experience/ability at work within the first few years.

Important note: In accordance with the Engineering Council's Regulations for Registration, the application, supporting documentation and interview shall be in English, subject only to the provisions of the Welsh Language Act 1993. Another language may be used purely for the clarification of a word or point, to enable the interview to continue. Candidates who submit IPD Forms and portfolios that do not comply with this regulation may be declined an interview.

Routes to completion of IPD

There are three routes for demonstrating achievement of IPD:

- Individually managed
- Accredited training schemes
- Retrospectively collated

It is important to note that you should pick the route most suitable for you. There is no clear difference in pass rates in the PRI based on route used.

Individually Managed

Where IPD is individually managed, you are responsible for managing your own training with the assistance of a personal mentor.

You must keep records of your training and experience to indicate your progress towards each Core Objective. The Institution has IPD quarterly report forms and progress summary records for this purpose.

You may also benefit from using a personal development diary which you should update weekly. This diary would include all activities relating to IPD and should make it easier to complete your quarterly reports. It is important that you have regular meetings with your personal mentor to review your progress in meeting the Core Objectives and agree your action plan.

You should also maintain your own record of continuing professional development (CPD). Further information on CPD can be viewed later in the document. You should keep a professional development action plan of your training objectives for subsequent periods of your training.

A mentor should preferably be a Chartered Member (Fellow, Member) of the Institution of Structural Engineers, or an individual of equivalent standing. They will normally be an experienced engineer in your workplace and will provide guidance, advice, and training.

There may be situations where a mentor will not be available within your organisation. In these instances, you are recommended to contact your local Regional Group for advice on sourcing an appropriate mentor.

You may have several mentors throughout your period of IPD. The level of experience of your mentors should be appropriate to the relevant Core Objectives. Guidance for mentors, in the form of a mentor's handbook, is available from the website or by contacting the Membership Department.

Once you have satisfied the IPD requirements you should complete the Institution's IPD final report forms. These should be signed by your personal mentor and sent to the Institution when submitting your completed application at the appropriate time.

Following this route will also require you to submit your IPD quarterly report forms, progress summary records and portfolio of work directly to your reviewers when requested.

Accredited Training Schemes

The Institution does not accredit company training schemes but candidates following comparable training schemes accredited by other bodies (e.g., ICE, HKIE) may submit those training records to demonstrate compliance with the Institution's Core Objectives. The experience must be in structural engineering, and you will be required to submit your full records of training and portfolio of work when requested to do so by your reviewers. You will also be required to complete the Institution's IPD final report forms.

Retrospectively Collated IPD

Where a mentor or training scheme is not available to you, this route offers the ability to complete the required documents based on previous experience up to the point of application. A Chartered Member can still assist with this process, but they would not need to provide mentor comments or sign off any of the IPD final report forms.

Portfolio guidance

All candidates are required to prepare a portfolio of work in support of their IPD final report forms, which will need to be submitted to your reviewers prior to the interview. However, to avoid unnecessary delays in the interview process the portfolio must be ready for submission at the time when you make your interview application to the Membership Department.

A copy of the completed portfolio will need to be submitted to both of your reviewers via email. If you are following the Individually Managed or Accredited Training Scheme routes you will also have to submit your supporting documents, which do not contribute towards the total portfolio page count:

- Individually Managed - IPD quarterly report forms and Progress summary record.
- Accredited Training Scheme – Signed training records.

N.B. These will need to be submitted directly to your reviewers and not to the Institution.

Remember, if you cannot provide your portfolio within the timescales required by your reviewers, your interview may be refused.

The portfolio must demonstrate that you have attained at least the minimum level of competence and responsibility for Chartered Membership. It is a vital element of the PRI process, and you should devote the necessary time and care to its production.

Core Objective 2 is about demonstrating ability in communication, and your IPD final report forms and portfolio will contribute to the assessment of this objective. It is therefore important to ensure that your documentation is of a high standard.

Portfolio format

When you are requested to submit your portfolio to your reviewers, you should use a method of transfer that is suitable and acceptable e.g. using a secure and appropriate electronic file transfer system/website.

The portfolio must be a single PDF with a maximum of 300 pages including drawings, sketches and any calculations. You should also include a hyperlinked index to the sections of your portfolio and bookmarking if

possible. If you exceed the number of pages, your reviewers will be unable to assess all the submitted information in detail, and consequently may decline to interview you.

The pages of text within the portfolio must be A4 size, i.e. you cannot reduce your pages to A5 to fit two pages onto an A4 sheet. Drawings must be no greater than A3 size. The font size used in your portfolio and IPD final report forms must be no smaller than Arial 10. You must ensure that all A3 pages can be clearly read on a computer screen and not contain information that is too small to be viewed.

The portfolio must contain evidence relating to all core objectives on which you are being assessed and allow easy cross-referencing with the IPD final report forms. Make sure that the information provided is relevant and relates directly to the core objectives and how you have achieved the standards.

You will be expected to include examples of work from a variety of projects that you have worked on. The portfolio must be sub-divided into the core objectives with only the relevant documents included in each section.

Where appropriate, you should provide comments and annotations on the submitted information to help demonstrate an understanding of the work and its relevance to the core objectives.

All work included within the portfolio must be your own. Submitting work carried out by other people is not permitted.

A portfolio checklist has been provided and is also available for download from the Institution's website. All candidates must include a signed version of the checklist as the first page of their portfolio. By completing the checklist, you are confirming that you have complied with the Institution's requirements in terms of the layout and variety of evidence provided within the portfolio. Failure to comply with these requirements will reduce the likelihood of success at the Professional Review Interview.

Examples of the type of information and documents you may wish to include are detailed within each Core Objective later in the guidance. You should avoid submitting repetitive designs or drawings and full reports of projects.

Inclusion of sensitive/confidential information

You may have worked on projects where some of the information, such as the client's name and cost of project, may be subject to a Non-Disclosure Agreement (NDA). If this applies to you, you are advised to redact the sensitive information but retain the key engineering aspects so that you can speak on them if questioned during the interview. The reviewers are Chartered members of the Institution and understand the importance of keeping confidential information solely for the purpose of the interview.

If the redacted information that you supply does not demonstrate that you meet the minimum requirements of the Core Objectives, you are advised not to include it in your portfolio.

The Professional Review Interview (PRI)

Your application

When you are ready to apply, you will be required to submit the following as a single document:

- A two-page experience report detailing your roles and responsibilities over the course of your career
- Your IPD final report forms for each of the 10 Core Objectives

Your interview fee will be paid online at the point of application to confirm your registration. If you have not previously made your initial application to begin the Professional Review process, and paid the appropriate fee, you will be asked to complete this before your interview can be arranged.

N.B. You will be elected as a Graduate member of the Institution during this application if you are not already one, incurring the appropriate pro-rated subscription fee at the time.

Begin your Chartered Member application - https://www.istructe.org/membership/chartered-membership/

If you have already made your initial application to become a Chartered Member, you do not need to do this again.

When making your initial application, you must include the details of your supporter, who can either be a Fellow (FIStructE) or Member (MIStructE) of the Institution of Structural Engineers. Your supporter may be contacted during the process to verify any aspect of your application.

If you are unable to find a suitable supporter we recommend that you:

- Try previous employment or colleagues. If they themselves are not Chartered, they may know someone who is
- Contact the university where you studied to see if any Members/Fellows would be able to assist
- Contact your local Regional Group or representatives via the Institution's website
- Search the online members' directory for members in your area

Regional Group members are under no obligation to confirm themselves as a supporter. A supporter does not confirm that you are qualified to be a Chartered Member, but rather that you are a fit and proper person to become a Member of the Institution after completing the Professional Review process.

Some members will either confirm they are happy for you to include their details, while others will only do so after they have met with you and reviewed your work, whilst some refuse to act as supporters.

The interview

Once your application has been processed, you will be contacted by your regional group with the details of your two reviewers. You will then confirm the time and date of your interview, while also being asked to email them your supporting documentation (i.e., portfolio of work, plus training records or IPD quarterly report forms if applicable). This usually begins to happen around 6 weeks after the application deadline has passed.

The Professional Review Interview will verify that you have achieved the Core Objectives to the minimum standards.

Interviews are conducted by two trained reviewers who will be experienced members of the Institution. These interviews are conducted remotely, typically via Microsoft Teams/Zoom.

The interview will normally be between 60 to 90 minutes in length. This can vary according to how long it takes for the reviewers to determine whether you have reached the required standard in each Core Objective. You must give a presentation of your career in structural engineering which should last approximately 10 minutes. You will be permitted to include no more than 10 slides when making the presentation, and it is expected that you will refer to the content in your portfolio and IPD Final Report Forms.

If you do not provide a presentation, it will result in you failing Core Objective 2, which is about your ability to communicate.

In the rare instance that your interview is conducted face-to-face, you are permitted to produce a handout of the 10 slides that you would have delivered online. You must provide a paper copy of the slides to each reviewer.

During the interview it is important to note that it is your responsibility to demonstrate that you have achieved the required standard for all 10 Core Objectives. Your reviewers will ask you questions primarily on the content of your portfolio but may also ask more general questions to help satisfy the requirements for each of the Core Objectives.

After the interview, the reviewers will inform the Institution of their decision which is then reviewed and approved by the Applications and Professional Review Panel before your result is released to you. Dates of the key meetings are published annually on the website.

If you have failed the PRI, the Institution will email you and advise you of the Core Objectives where you did not meet the standard. If you fail three or fewer objectives you will be re-interviewed on those objectives only. If you fail four or more objectives you will be required to re-sit the full interview. In both cases an updated submission will be required.

On request the Institution will provide you with the feedback comments from your reviewers which should help you understand where your application lacked sufficient detail. There is no limit on the number of times you can sit the PRI. However, should you fail up to three Core Objectives in your first interview, you will have three years to pass the failed Core Objectives before being required to resubmit IPD Final Report Forms for all 10 Core Objectives.

The use of AI during the interview

AI tools are not permitted for use during the interview in any capacity. If the reviewers suspect that you are using AI tools or software to help you answer their questions, your interview may be terminated and you may be reported to the Application and Professional Review Panel with a recommendation for your application to be voided.

Continuing Professional Development (CPD)

At the Professional Review Interview, you will be assessed on your commitment to CPD which is defined by the Institution as: The systematic maintenance, improvement and broadening of knowledge and skill and the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioner's working life.

All members of the Institution have an obligation to keep their skills and knowledge up to date and as a graduate you will be expected to understand this commitment at an early stage in your career.

Evidence of your CPD can be demonstrated by regular use of a development action plan, a CPD record/diary, and keeping a portfolio of your work and responsibilities during the period of your IPD.

You can update and submit your annual CPD record via My Account on the Institution's website.

Please note that the Institution operates mandatory reporting of CPD. Each year, 2000 members are selected to submit a CPD record for the previous year. Every newly elected Fellow, Chartered Member, Associate, Associate-Member and Technician will be obliged to submit a CPD record on request or be removed from membership. It is therefore recommended that you develop the habit of recording and submitting your CPD every year.

Please visit the Institution's website for further details.

Ethics

All members of the Institution are expected to uphold ethical values. You should demonstrate within your application that you are committed to working in an ethical and socially responsible manner, as outlined in the Institution's Code of Conduct.

The Code of Conduct states that all members shall:

- Act with integrity and fairness
- Have regard to the public interest and to the interests of all those affected by their professional activities
- Uphold the reputation of the profession
- Maintain and broaden their competence, and assist others to do so
- Undertake only those tasks for which they are competent
- Exercise appropriate skill and judgement
- Not maliciously or recklessly injure or attempt to injure the reputation of another person
- Avoid conflicts of interest
- Members must disclose to the Institution if they have been convicted of a criminal offence.

The Institution believes that ethics should apply throughout all aspects of an engineer's working life, and it is not therefore represented by a single Core Objective as ethical issues can have an influence across multiple objectives. The reviewers expect to see examples of how you have upheld ethical values relevant to your

working practices within your IPD Final Report Forms and portfolio, and you may also be asked to discuss this during your interview.

Appeals Procedure

The Institution has an appeals procedure for candidates who have been unsuccessful in their application. An appeal may be made on the following grounds only:

- Extenuating circumstances occurring immediately before or during the application process or interview, and/or
- Departure from the Institution's application or interview procedures.

Full details of the procedures are published on the Institution website.

Please note that recording of your interview by any means is not permitted and any such recording cannot therefore be used as evidence in an appeal or other disagreement with the judgement of the reviewers.

Associate AIStructE

Following a change to the Bye-Laws and Regulations in 2023, members who meet the academic requirements for CEng registration can apply to become an 'Associate of the Institution of Structural Engineers' and gain the AIStructE designation.

To be eligible for this grade you will need to hold either:

- An IStructE-accredited MEng degree
- An equivalent degree recognised under an international agreement (e.g. Engineers Europe)

If you are unsure of your eligibility, please contact the membership team to discuss this further.

You will be required to pass the full Chartered Member PRI before you can be elected to this grade. Once you have passed the PRI, you will be contacted by the Institution to confirm your election.

Please note that you will not be able to use the title 'Chartered Structural Engineer' as this is only available to those who have also passed the Chartered Membership exam or equivalent.

Core Objectives

Introduction

The following list of compulsory Core Objectives details the requirements for IPD for candidates intending to apply for the Chartered Member PRI.

The minimum standards required for the Core Objectives are:

Standard		Description
K	Knowledge	A knowledge and understanding of the subject and its application is required.
E	Experience	The subject should be performed independently or under supervision.
B	Ability	Perform the subject without supervision and be competent to advise others.

The Core Objectives, plus notes and examples are included below.

IPD final report forms

IPD final report forms are available to download from the website.

General advice for completing the IPD final report forms:

Personal: the reviewers will not be interested in what your company does, they are only interested in what you have done. Therefore, ensure that you state what you have personally undertaken and try to avoid generic statements about how your company operates.

Positive: do not sell yourself short. Try to avoid statements such as 'I have limited/some experience' – you either have experience or not. Try and ensure that the correct words are applied to the relevant Core Objectives, e.g., if it's an 'ability' Core Objective, do not use 'experience' or 'knowledge' always use 'ability'.

Practical: ensure you state how you have achieved the Core Objective standards; candidates often fall into the trap of simply describing the Core Objective or stating why it is important. This is not what the reviewers will want to know. There is no benefit in describing the properties of various materials (Core Objective 5) as the reviewers will already know this; what they need to know is how you have developed your understanding of materials and what practical experience you have.

1 PROFESSIONAL STANDARDS AND ENGINEERING RESPONSIBILITY (Minimum standard - Knowledge)

This objective is intended to demonstrate knowledge of professional conduct, a commitment to continuous professional development and engagement with the Institution and wider industry.

The candidate must demonstrate that they have knowledge of:

- the structure and purpose of the Institution of Structural Engineers, together with an awareness of the Institution's Code of Conduct
- an involvement in Institution affairs appropriate to their individual circumstances and location
- the limits of their technical competency in recognising complexity in problems and solution methods
- the importance of sharing knowledge and data across the industry
- the importance of CPD, the Institution requirements for CPD and a record of appropriate training
- their need to plan for an ongoing commitment to CPD
- being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion
- the ethical issues that could arise in their role and how they should carry out their responsibilities in an ethical manner

The candidate may also wish to demonstrate a further understanding of:

- how social inclusion, diversity, equality, and the UN Sustainable Development Goals (UN SDGs) all relate to being a professional engineer
- the need for ongoing change and evolution of the role and responsibility of the engineer
- the benefits of ongoing involvement in Institution affairs appropriate to their individual circumstances and location
- the relationship between the IStructE and the Engineering Council
- the institutions of other related disciplines in the candidate's home country and around the world (e.g., ASCE, CIBSE, HKIE, IEAust, ICE, IEE, IEI, IES, RIBA, RICS, SAICE, SEI)

Examples of evidence to demonstrate compliance with this objective:

Attendance at technical meetings and seminars, whether in person or remotely (via live broadcast or recorded video). The candidates may list their involvement with a brief overview of all activities and a brief commentary selected events.

A completed CPD record showing a variety of learning along with a plan for the learning to be undertaken over the following year.

By giving an example of where the candidate has applied:

- ethical principles as described in the Engineering Council's Statement of Ethical Principles and/or
- ethical principles as defined by the Institution's Code of Conduct or their employer.

Candidates are strongly encouraged to support, and encourage others to support, Institution activities in universities, colleges, and schools by giving careers talks, lecturing, providing case studies, assisting in the marking/critiquing of project work, etc.

Other examples:

- Regular contact with members of the Regional Group committee
- Knowledge of the Institution's Council and committee structure and the work of those committees
- Regular use of the Institution's website
- Regular review of the Structural Engineer journal
- Knowledge of the Institution's services including CPD courses and the library
- Knowledge of the international dimension of the Institution

2 COMMUNICATION (Minimum standard - Ability)

This objective is intended to demonstrate candidates have an ability to communicate effectively in a variety of situations and demonstrate appropriate interpersonal skills.

The candidate must demonstrate an ability to:

- produce appropriate drawings, sketches, or models (physical or digital) to communicate ideas
- produce formal reports
- produce both formal and informal communications appropriately
- communicate verbally and demonstrate effective inter-personal skills
- prepare and deliver presentations
- produce documents suitable for a variety of appropriate audiences
- create, maintain, and enhance productive working relationships, and resolve conflicts.
- evaluate and provide positive critical feedback on the work of others
- exchanging information and providing advice to technical and non-technical colleagues

Examples of evidence to demonstrate compliance with this objective:

The ability to communicate verbally will be assessed during the interview. The overall standard of the candidate's portfolio will be included in the assessment of this objective. Sketches and diagrams included in Objective 3 may also be considered as support to this objective provided they are referenced in the final report form.

Possible examples that may be included are:

- In-house/client presentations
- Design stage reports, feasibility studies, reports to support planning applications etc.
- Drawings, sketches, diagrams, or visualisations illustrating design concepts or details, structural behaviour, or construction methodology
- Communications or reports describing engineering solutions or principles to a non-technical reader
- Communications (emails) illustrating the candidate's collaboration with other parties, or situations where the candidate has contributed to working relationships or conflict resolution
- Presentations to schools, colleges, universities, etc.
- Team building exercises
- Participation in Institution competitions e.g., Young Structural Engineers' International Design Competition or other competitions supported by other institutions

3 CONCEPT CREATION AND DESIGN (Minimum standard - Ability)

This objective is intended to demonstrate a candidate's skills around producing structural solutions in response to a brief. This would account for key aspects of a structural engineer's skillset such as designing for safety, carbon, durability, reuse, aesthetics, and cost.

The candidate must demonstrate ability in:

- understanding and interrogating the brief to identify possible solutions
- producing and comparing a variety of options to a single brief
- determining appropriate loading and design criteria
- designing load transfer and stability systems, both superstructure and substructure
- considering robustness and accidental actions including fire
- estimating and communicating the embodied carbon (both upfront and whole life) in the structure as part of the decision-making process, and minimising this as far as possible
- consideration of construction issues (e.g., detailing, constructability, phasing, site constraints)
- driving collaboration across the project team through an appreciation of wider objectives
- coordinating the structural design with other disciplines (e.g., civils, drainage, facades)

The candidate may also wish to demonstrate ability in:

- reusing or repurposing existing structures or components, wherever feasible
- considering inclusive design in structural schemes
- designing for deconstruction, adaptability, and reuse at end-of-life
- proposing concepts more suited to lower-carbon materials

Examples of evidence to demonstrate compliance with this objective:

- Sketches, drawings, models (digital or images of physical), reports, presentations etc. to communicate:
  - Structural arrangement and behaviour
  - Resistance to failure modes (e.g., robustness, fire)
  - Construction and deconstruction
  - Interaction with other disciplines
- The use of carbon calculations (including use of The Structural Carbon Tool) to demonstrate and advocate for low carbon designs
- The development or use of software to evaluate or compare solutions

4 ANALYSIS AND SIZING (Minimum standard – Ability)

This objective is intended to demonstrate an understanding of structural behaviour and the ability to assess behaviour using appropriate methods of analysis. This objective is also intended to demonstrate competency of interpreting that analysis and using it to size structural elements and details, using the minimum amount of necessary material.

The candidate must demonstrate ability in:

Analysis:

- understanding structural behaviour at all scales, from a single element to an entire frame
- using the appropriate analysis tools for each purpose (e.g., hand calcs and models to the appropriate level of detail)
- using suitable modelling assumptions for each purpose
- applying appropriate design criteria including loading, utilisation targets, serviceability, and user comfort (e.g., vibration)
- understanding the limitations of the model and its outputs (approximations, simplifications, etc)
- verifying results through hand checks, simple approximation, and engineering judgement
- validation and verification of analysis or design methods
- identification of limitations in analysis and/or design methods either in terms of accuracy or capability

Sizing and detailing:

- sizing structures to minimise material usage within the agreed design criteria (e.g., strength, stiffness, durability/maintenance, buildability, etc.)
- designing structural details such as connections and reinforcement to the appropriate level of detail at each stage of design
- determining and utilising the capacity of existing structures and components through collection and analysis of appropriate information or data where relevant
- using appropriate standards, codes of practice, specifications, Institution publications, technical agency publications, bulletins, reports, commercial and relevant publications from other professional institutions etc., and applying the requirements or recommendations of these documents within specification or design criteria

Examples of analysis evidence to demonstrate compliance with this objective:

- beam and frame interaction
- braced and unbraced frames action
- resistance to disproportionate collapse and other accidental actions (e.g., fire)

- movement (thermal, wind, seismic, settlement, creep)
- assessing soil-structure interaction
- analysing connections and interfaces where standard assumptions are inappropriate
- dynamic analysis e.g., for floor vibrations or seismic
- sensitivity analysis to determine if a structural system or element requires particular attention or is disproportionately affecting the overall structural behaviour of the model
- the Certificate in Structural Behaviour may be used to demonstrate understanding of structural behaviour, including trusses, beams, plasticity, and dynamics

Examples of sizing and detailing evidence to demonstrate compliance with this objective (at levels of detail appropriate for the design stage):

- stability elements (e.g., walls, bracing, diaphragms)
- vertical load transfer elements (e.g., slabs, beams, columns)
- substructure elements (e.g., foundations, basements, retaining walls)
- transfer structures (e.g., beams, trusses, lintels)
- verification of existing and/or reused structural components
- connections between elements, including those enabling composite action
- reinforcement detailing
- interface details between materials e.g., timber to steel
- movement joints and construction joints
- superstructure to substructure connections
- details between reused structures and new extensions

5 MATERIALS (Minimum standard - Ability)

This objective is intended to demonstrate an in-depth understanding of the structural materials used in the candidate's work, along with an ability to specify and coordinate the use of such materials.

The candidate must demonstrate ability in specifying and designing with materials in response to an understanding of:

- the behaviour and structural properties (including strength, stiffness, ductility, and directionality) for different materials and their common grades/subgrades, and how these impact design and detailing requirements
- the effects on carbon emissions related to production methods, material sourcing and supply chains
- durability requirements
- detailing requirements, including an appreciation of how these affect end-of-life disassembly and reuse
- movement behaviour including creep, drying, and thermal movement

Whilst candidates often choose to specialise in one or two materials (and thus will have developed an ability in determining their behaviour) they must still have some knowledge of the carbon credentials, availability, behaviour, cost, manufacture, principal engineering properties and potential applications of a wider range of construction materials.

Examples of evidence to demonstrate compliance in this objective:

- appropriate selection and use of materials in response to their characteristics
- appropriate interfaces between materials
- response to carbon emissions that has been affected by material type, sourcing, and production methods, including the interpretation or use of Environmental Product declarations (EPDs) where applicable
- production of material specifications including aspects such as protective finishes, paints, reinforcement cover etc.
- the appropriate use of materials considering manufacturing technologies, locale, and culture

6 SUSTAINABILITY (Minimum standard - Experience)

This objective is intended to demonstrate experience in applying structural engineering in a way that minimises (and ultimately, reverses) negative environmental impacts whilst maximising societal benefit.

The candidate must demonstrate experience in:

- communicating the environmental impact of a structural design to the design and client team
- questioning the brief to reduce negative impacts whilst achieving the client's desired outcomes
- advocating for reuse and 'build less' design approaches
- considering wider sustainability aspects within their work

The candidate may also wish to demonstrate experience in:

- working with the wider design team to reduce the overall project carbon
- balancing the reduction of upfront embodied carbon and whole-life carbon
- use of circular economy principles
- considering regenerative design principles
- use of, or interaction with, environmental rating schemes and design standards e.g., BREEAM, LEED, Passivhaus.

Examples of evidence to demonstrate compliance with this objective:

- reports, presentations, or emails used to communicate:
  - the expected carbon impact of a design, perhaps including temporal aspects (upfront, end-of-life, sequestration)
  - impact of the structure within the wider context of the impact of the whole design
  - alternative design solutions that require a change to 'the brief' but reduce negative impacts – noting that 'the brief' can be as simple as a single architectural request
  - the benefits of a proposal that reuses an existing structure
  - the use of environmental rating schemes
- designs that use circular economy principles such as designing for future adaption, deconstruction, and reuse
- consideration of wider sustainability impacts during design such as those outlined in The Climate Framework (https://www.climateframework.com/) and the Living Building Challenge (https://living-future.org/lbc/) , for example:
  - global context, sustainability policy,
  - health and wellbeing, pollution, and contamination,

- human factors such as social value, labour rights, traceability,
- waste management and recycling,
- land use, protection of plants and habitats,
- economic sustainability such as involvement in new markets

- the specification of in-service data collection as a way of informing future designs and evaluating the performance of existing method

7 CONSTRUCTION (Minimum standard - Experience)

This objective is intended to demonstrate a candidate's experience of the practical process to convert design work into completed structures and should demonstrate that they are able to contribute to this in a meaningful way. Practical experience of site conditions and working practices is essential to the safe design and specification of projects.

The candidate must demonstrate that they have gained experience of:

- construction techniques, construction plant and machinery
- designing, specifying, or reviewing temporary systems
- reviewing construction programmes and construction sequencing
- reviewing or producing fabrication or shop drawings
- erection methodologies
- identification and correction of potential errors
- how their observations of construction/fabrication have informed their approach to design/buildability

Examples of evidence to demonstrate compliance in this objective:

It is recognised that not all candidates will be able to spend a continuous period on site for any significant length of time. In this case ad-hoc exposure to construction or assembly sites should be recorded.

Experience may be demonstrated by providing records of some, or all, of:

- work placement on site
- site meetings
- site visits
- inspections
- surveys
- testing procedures
- supervision of works
- checking of as installed features
- dealing with site queries

Evidence which may be provided:

- site visit and site meeting notes
- inspection records

- survey notes
- construction sequence diagrams or outline method statements produced to support design work
- demolition drawings
- temporary works proposals/designs or comments on temporary work drawings
- movement and monitoring specifications

8 HEALTH, SAFETY AND RISK MANAGEMENT (Minimum standard - Experience)

This objective is intended to demonstrate a candidate's experience in meeting health and safety requirements and legislation.

The candidate must demonstrate experience of:

- using appropriate health and safety standards
- engagement with CROSS (Collaborative Reporting for Safer Structures) https://www.cross-safety.org/uk
- reviewing and applying learning from CROSS publications
- producing risk and hazard assessments
- designing out risk
- safety on construction sites

Examples of evidence to demonstrate compliance with this objective:

Candidates may provide examples of evidence such as:

- risk assessments and communication of residual hazards in connection with their projects
- how risk has been considered or mitigated in their design work
- where learning from CROSS publications have been used in their work
- sharing safety information with CROSS for others to learn from
- where health and safety legislation has impacted on their design work
- risk management undertaken by the candidate
- assessment of site conditions, including soil conditions, during planning and design
- obtaining relevant qualifications and certifications

9 MANAGEMENT (Minimum standard - Experience)

This objective is intended to demonstrate a candidate's experience of management skills for programming and control.

The candidate must demonstrate experience of:

- management of individuals, teams, and data/information
- leadership
- programming and project control
- interdisciplinary/inter team liaison and interface management
- working within a quality management system
- contributing to and working within a quality plan

In addition, candidates may choose to demonstrate experience of:

- working within Environmental Management Systems
- exchange of digital information and use of a common data environment (CDE) or similar

Examples of evidence to demonstrate compliance with this objective:

Examples of project control documents and reports generated and/or used by the candidate, such as:

- programmes
- budgets
- resource planners
- information schedules
- team briefings and feedback
- quality plans
- meeting notes and minutes

Further examples include:

- examples outlining how the candidate has applied Quality Management Systems (i.e., ISO9001 etc)
- examples outlining how the candidate has applied Total Quality Management

Management experience may be gained through:

- attendance at project meetings (design and contract)
- the development of project management skills including the definition and organisation of the project and its constituent phases
- the management of people and the interface with stakeholders within the project
- the development of time management and delegation skills
- attending quality audits
- carrying out internal quality audits

10 COMMERCIAL AND LEGAL (Minimum standard - Knowledge)

This objective is intended to demonstrate a candidate's knowledge of commercial, financial, contractual, and legal matters relevant to the country and industry in which they work.

The candidate must demonstrate knowledge of:

- commercial pressures within the construction industry including the effects of national and international current affairs on costs
- the methods of calculating construction costs including estimating and monitoring the cost of design work
- sensitivity of cost variations in construction techniques
- relevant forms of contract used in projects for which they are involved, for both design and construction
- the procurement routes relevant to the work in which they are involved and appropriate procurement issues including dispute resolution
- statutory legislation, negligence/liability laws, health, and safety legislation
- decarbonisation and sustainability legislation
- contract law

The candidate may also wish to demonstrate knowledge of:

- insurance matters
- adjudication process
- arbitration process
- the role of the expert witness

Examples of evidence to demonstrate compliance with this objective:

Candidates may provide evidence such as:

- records of value engineering exercise to which they have contributed
- information relating to whole life costing exercises in connection with their designs
- fee assessments and quotations prepared by them or to which they have provided input
- bills of quantities prepared by the candidate or comments made by the candidate on such documents
- monitoring the control of project costs within their office
- examples of correspondence where the candidate has quoted or used clauses from contract documents in their work
- examples of involvement in dispute resolution
- examples of their involvement with different project procurement routes

- activities and learning points from attendance at courses

It is expected that candidates will demonstrate knowledge of a selection of contracts and procurement routes relevant to the geography and industry in which they work.

The Institution of Structural Engineers

Portfolio Checklist

All candidates must complete this checklist and include a signed version as the first page of their portfolio. By completing this checklist, you are confirming that you have complied with the Institution's requirements in terms of layout and variety of evidence provided within the portfolio. Failure to comply with these requirements will reduce the likelihood of success in the Professional Review Interview.

Portfolios must be no larger than 300 pages in total. Any pages above this maximum limit will be removed by your reviewers and cannot be used during the interview.

Please ensure that your portfolio is sub-divided into the core objectives, with only the relevant documents included in each section.

Evidence	Suggested Examples	Included
Evidence relating to all core objectives being assessed		
All supporting documents are supplied in English language		
Project correspondence	• Letters, emails, reports, site instruction records, site inspection notes, meeting notes etc.	
Hand drawn conceptual design sketches and sketch details		
CAD project drawings including evidence on the drawing, by way of annotation, of the candidates' part played in the drawing production		
Examples of methods of analysis	• Both manual and computer aided	
Examples of design calculations	• Both manual and computer aided	
Examples of embodied carbon understanding	• Carbon calculations used to communicate importance to client	
Specification documents or specification notes	• Carbon emission checks on materials	
Risk assessment procedures	• How assessed risks are dealt with and/or communicated to other, including (if appropriate) details of any personal involvement with health and safety issues on site	
Engagement with structural safety	• CROSS reports	
An understanding of environmental/sustainability issues	• Personal involvement on a project showing expected carbon impact of a design • Background reading • Attendance on relevant courses	
Site experience	• Photographs taken during site visits • Site inspection notes / Site meeting notes • Correspondence relating to site issues etc.	
Basic management skills and responsibilities	• Programming of design works and staff resources	

Evidence	Suggested Examples	Included
	• Release schedules • Budget management • Additional works	
Quality assurance systems	• In-house issuing procedures • In-house checking procedures • Checking of subcontract/specialist design information etc.	
Demonstration of an understanding of basic forms of contract	• Personal involvement on a project • Background reading • Attendance on relevant courses	
Ethics	• Where you have exercised your duties in an ethical manner • Where you have applied ethical principles • Where you have upheld ethical principles as defined by your organisation or company	
A CPD record	• Attendance certificates • Personal notes etc.	

I confirm that the evidence I have submitted in the portfolio of work is my own work

Signed:

Date: